

50  
C14

25. The isolated protein of claim 24, wherein the conserved region is selected from the group consisting of:

- (i) residues 1 to 50 of SEQ ID NO: 11;
- (ii) residues 109 to 120 of SEQ ID NO: 11;
- (iii) residues 135 to 198 of SEQ ID NO: 11;
- (iv) residues 221 to 239 of SEQ ID NO: 11; and
- (v) residues 249 to 604 of SEQ ID NO: 11.

26. The isolated protein of claim 24, wherein the protein comprises at least twelve contiguous amino acids of a sequence selected from the group consisting of SEQ ID NOs: 1-10.

27. The isolated protein of claim 24, wherein the isolated protein has an amino acid sequence selected from the group consisting of:

- (i) residues 1 to 50 of SEQ ID NO: 1;
- (ii) residues 1 to 50 of SEQ ID NO: 2;
- (iii) residues 1 to 50 of SEQ ID NO: 3;
- (iv) residues 1 to 50 of SEQ ID NO: 4;
- (v) residues 1 to 50 of SEQ ID NO: 5;
- (vi) residues 1 to 50 of SEQ ID NO: 6;
- (vii) residues 1 to 50 of SEQ ID NO: 7;
- (viii) residues 1 to 50 of SEQ ID NO: 8;
- (ix) residues 1 to 50 of SEQ ID NO: 9;
- (x) residues 1 to 50 of SEQ ID NO: 10;
- (xi) residues 125 to 188 of SEQ ID NO: 1;
- (xii) residues 125 to 188 of SEQ ID NO: 2;
- (xiii) residues 122 to 185 of SEQ ID NO: 3;
- (xiv) residues 127 to 190 of SEQ ID NO: 4;
- (xv) residues 125 to 188 of SEQ ID NO: 5;
- (xvi) residues 132 to 195 of SEQ ID NO: 6;
- (xvii) residues 131 to 194 of SEQ ID NO: 7;

- (xviii) residues 131 to 194 of SEQ ID NO: 8;
- (xix) residues 127 to 190 of SEQ ID NO: 9;
- (xx) residues 125 to 188 of SEQ ID NO: 10;
- (xxi) residues 211 to 229 of SEQ ID NO: 1;
- (xxii) residues 206 to 224 of SEQ ID NO: 3;
- (xxiii) residues 237 to 591 of SEQ ID NO: 1;
- (xxiv) residues 237 to 592 of SEQ ID NO: 2;
- (xxv) residues 235 to 589 of SEQ ID NO: 3;
- (xxvi) residues 239 to 594 of SEQ ID NO: 4;
- (xxvii) residues 237 to 591 of SEQ ID NO: 5;
- (xxviii) residues 244 to 599 of SEQ ID NO: 6;
- (xxix) residues 243 to 598 of SEQ ID NO: 7;
- (xxx) residues 243 to 598 of SEQ ID NO: 8.
- (xxxi) residues 239 to 594 of SEQ ID NO: 9; and
- (xxxii) residues 237 to 592 of SEQ ID NO: 10.

28. The isolated protein of claim 24 further comprising one or more variable (V) region amino acids of an NhhA polypeptide.

29. The isolated protein of claim 24 having an amino acid sequence selected from the group consisting of: SEQ ID NO: 23, SEQ ID NO: 24, SEQ ID NO: 25, SEQ ID NO: 26, SEQ ID NO: 27, SEQ ID NO: 33, SEQ ID NO: 34, SEQ ID NO: 35, SEQ ID NO: 36, SEQ ID NO: 37, SEQ ID NO: 38, and SEQ ID NO: 39.

30. An allelic variant of the isolated protein of claim 24.

31. A pharmaceutical composition comprising one or more isolated proteins according to claim 24.

32. The pharmaceutical composition of claim 31 which is a vaccine. --